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EXAMINER

SHENG, TOM V

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 09/03/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/930,183

Applicant(s)

OOE ET AL.

Examiner

Tom V Sheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 31 is/are rejected.
- 7) ☒ Claim(s) 25-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 29 is objected to because of the following informalities: claim 29 should be dependent on claim 25 instead of claim 13 since claim 29 is a further limitation of claim 25's slits. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9-11 and 21-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for claims 9 and 21, only the general effect of moving images and the number of redundant subframes on the pitch of the pixels on the retina is recited without showing one of ordinary skill in the art how the effect occurs. Moreover, the claims recite only the effect without claiming an inventive element involved. Claims 10-11 and 22-23 are dependent on claims 9 and 21, respectively.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 12-16, 24 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Maekawa et al. (JP 2000-163013).

As to claim 1, Maekawa teaches a method of driving a display device (a display unit that performs a halftone display by the time-sharing method in the field - i.e. sub-frame method; see paragraph 1 under Detailed Description) by constructing one frame with a plurality of subframes (N subfields with different time weighting are used for display in a field - by choosing the existence of luminescence of each subfield; see paragraphs 2 and 3), for displaying an input image that moves on a display panel (for displaying a moving "view"; see figure 4a, which shows an image/view that moves from right to left between time 0F and 1F where F is a frame/field), wherein: the method

assumes a specific pixel on a retina that is formed on the retina based on the input image (figure 4a, as the view moves from right to left by 3 cells (shown as 3 sub-pixels) in a field time, because of the integrative nature of the visual-sense property of the human eye, the retina recognizes the view as moving to the right instead and inherently also as 3 cells; see paragraph 4), and

controls light emission of each subframe such that luminance of the specific pixel on the retina becomes substantially equal to luminance of a pixel corresponding to the input image (figures 6a and 6b, it redistributes the luminescence (turned on) subfields by moving the luminescence positions of each subfield to within the two dashed lines recognized by the retina; see

paragraph 7). Note the luminance of the pixel does not change, only the distribution of luminance within a field changes.

As to claim 2, Maekawa teaches controlling the light emission of each subframe (moving the luminescence positions of the subfields) based on a move direction (whether the view is moving right or left) and a speed of motion of the input image that moves on the display panel (the number of cells that moved per field). See paragraphs 5-7.

As to claim 3, Maekawa teaches subfields surrounded by two dashed lines (figures 6a and 6b) recognized by the retina that reads on claimed track of a pixel formed on the retina based on move of the input image.

As to claim 4, Maekawa's subfields surrounded by two dashed lines reads on claimed subframes included in the tracks of the specific pixel on the retina or adjacent pixels on the retina.

As to claim 12, by maintaining the luminance between a pixel in display and a pixel on the retina, the same can also be applied for the sub-pixels. Thus, the luminous colors of the specific pixel can be maintained as well.

Claim 13 is an apparatus claim corresponding to method claim 1 and is rejected per claim 1's analysis.

Apparatus claim 14 is rejected per corresponding method claim 2.

Apparatus claim 15 is rejected per corresponding method claim 3.

Apparatus claim 16 is rejected per corresponding method claim 4.

Apparatus claim 24 is rejected per corresponding method claim 12.

As to claim 31, Maekawa's invention is for use in a discharge-in-gas panel, which is a plasma display device.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5-9 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maekawa as applied to claim 3 above, and further in view of Yamada et al. ("Doubling of PDP Resolution for Moving Pictures by Use of a Virtual Pixel Technique", IDW '00, pages 703-706).

Consider claims 5 and 6. In Maekawa's invention, the pitch of pixels in the display and corresponding pitch of pixel on the retina are assumed the same size. However, Maekawa does not teach a case where a pitch of pixels on the retina is made shorter than a pitch of pixels on the display panel.

Yamada's invention is in the same area of moving picture display, using time-sharing driving method that is the standard method used in PDP display. In particular, Yamada teaches doubling the number of perceived pixels in a moving picture by doubling the set of sub-field arrangements with one set during the time 0 - 0.5F and the other set during the time 0.5F - 1F. As a result, the pitch of pixels perceived is reduced in half and the display resolution is doubled. See

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figures 1c and 2c, and page 703-704 content under the heading "Virtual pixel technique." This reads on claimed pitch of pixels on the retina ... is made shorter than a pitch of pixels on the display panel and claimed pitch of the pixels on the retina are selected as one half of the pitch of the pixels on the display panel.

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to incorporate Yamada's virtual pixel technique into Maekawa's invention because of the resolution enhancement without the need to physically reduce the pitch size of pixels on a display panel.

As to claim 7, figures 2a - 2d shows the various uses of two sets of N subframes are provided per one frame period. In particular, N is 8 in figure 2a, 10 in figure 2b, 12 in figure 2c, and 14 in figure 2d.

As to claim 8, first N subframes of Yamada are used for first half frame period and second N subframes are used for the second half frame.

As to claim 9, the higher the speed of motion of the image the lower the resolution, and the more subframes (whether redundant or not) the higher the resolution. These factors certainly affect the pitch of the pixels on the retina.

Apparatus claims 17 and 18 are rejected per corresponding method claims 5 and 6.

Apparatus claim 19 is rejected per corresponding method claim 7.

Apparatus claim 20 is rejected per corresponding method claim 8.

Apparatus claim 21 is rejected per corresponding method claim 9.

***Allowable Subject Matter***

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8. Claims 25-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: none of the prior arts of record teaches the use of slits at light emitting cell (pixel or sub-pixel) in order to limit the effective area of the light-extracting portion (effective pixel or sub-pixel size) as recited in claim 25 and the use of colored light-shielding dielectric for forming the slits as recited in claim 29. Claims 26-28 and 30 further depend on claims 25 and 29, respectively.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V Sheng whose telephone number is (703) 305-6708. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703) 305-4938. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



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August 25, 2003

  
**KENT CHANG**  
**PRIMARY EXAMINER**